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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/575,687	04/09/2007	Kaoru Nomichi	19036/41822	3602
4743 7590 10/18/2011 MARSHALL, GERSTEIN & BORUN LLP 233 SOUTH WACKER DRIVE 6300 WILLIS TOWER CHICAGO, IL 60606-6357				
EXAMINER LEE, GILBERT Y				
ART UNIT 3674		PAPER NUMBER		
NOTIFICATION DATE 10/18/2011		DELIVERY MODE ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mgbdocket@marshallip.com

Office Action Summary**Application No.**

10/575,687

Applicant(s)

NOMICHI ET AL.

Examiner

GILBERT LEE

Art Unit

3674

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 August 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/13/06 & 6/5/06 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-945)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. The amendment filed 8/4/11 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, and 5 are rejected under 35 U.S.C. 102(b) as being anticipated by Edlund (US Patent No. 3,942,806).

Regarding claim 1, the Edlund reference discloses a gas seal structure (e.g. Fig. 9) capable of being used with a gas having a high permeability with respect to a rubber material, the gas seal structure comprising:

a main seal means (e.g. seal of Fig. 7 that would sit in right groove of Fig. 9) that is made of the rubber material (Col. 6, Lines 49-50 and Col. 1, Lines 5-20) and is disposed between two seal surfaces (e.g. surfaces of 26 and 10);

a sub-seal means (e.g. seal of Fig. 7 that would sit in left groove of Fig. 9) that is made of resin (Col. 6, Lines 48-50) and is disposed between the two seal surfaces (e.g. Fig. 9), the sub-seal means being located closer to a higher-pressure region (P_H) than the main seal means (Fig. 9) and being provided with a concave groove (11); and

a pressure variation reducing means (e.g. 28) that is disposed between the main seal means and the sub-seal means (Fig. 9) and has a variation reducing space (28) connected only to a gap (e.g. gap between 26 and 10) formed between the two seal surfaces, the variation reducing space being closed by the main seal means and the sub-seal means such that the variation reducing space is disconnected from the atmosphere (Fig. 9); and

wherein the variation reducing space is formed by a concave portion formed in one of the two seal surfaces (Fig. 9).

Regarding claim 2, the Edlund reference discloses the sub-seal means being disposed such that the concave groove opens toward the higher-pressure side region (Fig. 9).

Regarding claim 4, the Edlund reference discloses a gas seal structure (e.g. Fig. 9) comprising:

a main seal (e.g. seal of Fig. 7 that would sit in right groove of Fig. 9) comprising a rubber material (Col. 6, Lines 49-50 and Col. 1, Lines 5-20), the main seal between two seal surfaces (e.g. surfaces of 26 and 10), the rubber material capable of having a high permeability when exposed to a gas having a low molecular weight (Fig. 7);

a sub-seal (e.g. seal of Fig. 7 that would sit in left groove of Fig. 9), the sub-seal disposed between the two seal surfaces (Fig. 9), the sub-seal disposed closer to a higher-pressure region (P_H) than the main seal (Fig. 9);

a concave groove (11) formed in the sub-seal (Fig. 7);

a gap (e.g. gap between 26 and 10) formed between the two seal surfaces adjacent the sub-seal (Fig. 9);

an enclosed pressure variation reducing space (28) disposed between the main seal and the sub-seal and in flow communication with the gap (Fig. 9), the pressure reducing space closed by the main seal and the sub-seal (Fig. 9), the pressure variation reducing space formed at least in part by a concave portion formed in either of the two seal surfaces and between the main seal and the sub-seal (Fig. 9), the concave portion formed a volume (e.g. volume of 28) arranged to inhibit occurrence of a blistering phenomenon in the main seal (Fig. 9).

Regarding claim 5, the Edlund reference discloses the sub-seal means being disposed such that the concave groove opens toward the higher-pressure side region (Fig. 9).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Edlund in view of Balsells (US Patent No. 4,890,937).

Regarding claim 3, the Edlund reference discloses the invention substantially as claimed in claim 1.

However, the Edlund reference fails to explicitly disclose the concave groove of seal opening toward a lower-pressure side region.

The Balsells reference, a seal with a groove, discloses making the concave groove of a seal, close to a high pressure region, open toward a lower-pressure side region (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to reverse the seal in the Edlund reference in view of the teachings of the Balsells reference in order to limit the pressure acting on main seal.

Regarding claim 6, the Edlund reference discloses the invention substantially as claimed in claim 4.

However, the Edlund reference fails to explicitly disclose the concave groove of seal opening toward a lower-pressure side region.

The Balsells reference, a seal with a groove, discloses making the concave groove of a seal, close to a high pressure region, open toward a lower-pressure side region (Fig. 1).

It would have been obvious to one of ordinary skill in the art at the time of the invention to reverse the seal in the Edlund reference in view of the teachings of the Balsells reference in order to limit the pressure acting on main seal.

Response to Arguments

4. Applicant's arguments filed 8/4/11 have been fully considered but they are not persuasive.

With regards to the applicant's argument of the Edlund reference, the argument is not persuasive because the concave variation reducing space is clearly shown at 28. The variation reducing space of the current invention seems to be a recess in the sealing surface of 3. Similarly, space 28 is not the radially innermost surface of element 26, and is therefore a concave portion in the sealing surface.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to GILBERT LEE whose telephone number is (571)272-5894. The examiner can normally be reached on 8:00 - 4:30, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Beach can be reached on 571-272-6988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/GILBERT Y LEE/
Primary Examiner, Art Unit 3674